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09/909,003	07/19/2001	Henry A. Pfeffer	FMCP-090US3	9320

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Patent Administrator  
FMC Corporation  
1735 Market Street  
Philadelphia, PA 19103

EXAMINER

NAFF, DAVID M

ART UNIT	PAPER NUMBER
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1651

DATE MAILED: 09/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/909003

Applicant(s)

P. J. Joffe

Examiner

Kadoff

Group Art Unit

2657

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

## Status

- ☒ Responsive to communication(s) filed on 7/19/01
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1-34 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1-34 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 7/19/01 ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892 ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948 ☐ Other \_\_\_\_\_

Office Action Summary

Claims in the application are 1-34.

This application is a continuation-in-part of 09/395,465, now patent no. 6,268,101 B1.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

- 5 The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 20-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- 10 The claims are unclear by claim 20, line 4, and claim 27, line 11, being unclear as to whether the gel beads are hydrocolloid gel beads previously required or are some other beads. It is suggested that -- hydrocolloid -- be inserted before "gel" in the lines of the claims.

- 15 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- 20 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 25 This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not  
30 commonly owned at the time a later invention was made in order for the

examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 and 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas et al (5,662,840) in view of Hartmeier

5 (4,182,655) and Haruta et al (4,975,375).

Claims 1-8 are drawn to hydrocolloid gel beads of average particle size of about 5-150 microns in diameter containing an immobilized enzyme, and claims 20-26 are drawn to hydrocolloid gel beads containing an immobilized enzyme prepared by forming dehydrated hydrocolloid gel beads  
10 having a diameter of 5 to 150 microns, and imbibing into the beads an aqueous enzyme solution.

Thomas et al disclose producing hydrocolloid gel beads having a diameter of less than 50 microns that may be used as a carrier for an enzyme (col 1, lines 22-31, and col 4, line 27). The beads have the  
15 property of flowing over each other as water (col 6, lines 48-51).

Hartmeier discloses enzyme immobilization by contacting dried protein gel particles of 50 to 100 microns in size with an aqueous enzyme solution and allowing the particles to swell and suck up the enzyme solution to obtain the immobilized enzyme. For example, see example 1  
20 and claim 1.

Haruta et al disclose enzyme immobilization by swelling a polymer gel in a solution of enzyme to absorb and immobilize the enzyme in the gel (col 4, line 27, and col 5, lines 5-10).

When using the gel beads of Thomas et al as a carrier for an enzyme,  
25 it would have been obvious to provide the enzyme in the beads by drying

the beads and allowing the beads to rehydrate and swell in an aqueous enzyme solution so the enzyme solution is absorbed into the beads and the enzyme is immobilized therein as suggested by Hartmeier and Haruta et al carrying out enzyme immobilization by rehydrating a dried gel in an aqueous enzyme solution to absorb the solution into the gel as the gel rehydrates.

Claims 9-19 and 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1-8 and 20-26 above, and further in view of Cambou et al (document 14 on form PTO-1449) or Kazandjian et al (document 15), and if necessary in further view of Zaks et al (listed on form PTO-892).

The claims require using the enzyme-containing beads set forth above in a chemical transformation wherein the beads and a reaction substrate are contacted in the presence of a non-aqueous solvent to convert the substrate to a product.

Cambou et al (page 2688, left col, paragraph above "Results and Discussion") and Kazandjian et al (page 5448, right col, lines 9-14 of first full paragraph) disclose converting a substrate to a product with an immobilized enzyme in an organic medium.

When preparing enzyme-containing beads as set forth above, it would have been obvious to use the beads to convert a substrate to a product in an organic medium as suggested by Cambou et al or Kazandjian et al performing enzymatic catalysis in an organic medium with an immobilized enzyme. Using the beads for enzymatic catalysis in an organic medium would have been expected to provide the same type of result as obtained

by Cambou et al or Kazandjian et al when carrying out enzymatic catalysis in an organic medium. Zaks et al further disclose enzymatic catalysis in an organic medium, and if needed would have further suggested enzymatic catalysis in an organic medium.

5       The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29  
10 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR  
15 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record  
20 may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-34 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 6,268,191. Although the conflicting claims are not  
25 identical, they are not patentably distinct from each other because the

present claims drawn to gel beads and methods as described above would have been obvious from the claims of the patent that are drawn to enzyme-containing hydrocolloid gel beads of about 5-150 microns in diameter, and to preparing the beads by imbibing an aqueous enzyme solution into  
5 dehydrated hydrocolloid gel beads of about 5-150 microns in diameter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Naff whose telephone number is (703) 308-0520. The examiner can normally be reached on Monday-Thursday and every other Friday from about 8:30 AM to about 6:00  
10 PM.

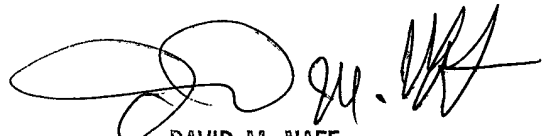
If attempts to reach the examiner by telephone are unsuccessful, a message can be left on voice mail.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn, can be reached at telephone number  
15 (703) 308-4743.

The fax phone number is (703) 872-9306 before final rejection or (703) 872-9307 after final rejection.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist  
20 whose telephone number is (703) 308-0196.

25 DMN  
8/30/02

  
DAVID M. NAFF  
PRIMARY EXAMINER  
ART UNIT 1651